DOCUMENT RESUME

ED 044 936 EM 008 595

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TITLE	Attitude and Achievement Comparisons for Direct and Television Classes in Biological Science.
INSTITUTION	Miami Univ., Coral Gables, Fla. Univ. Coll.
SPONS AGENCY	Fund for the Advancement of Education, New York, N.Y.
REPORT NO	R-4
PUB DATE	Jul 64
NOTE	8p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$0.50
DESCRIPTORS	Academic Achievement, Biological Sciences, Educational Attitudes, *Educational Television, *Instructor Centered Television, Investigations, Lecture

ABSTRACT

In an investigation conducted to determine student attitude and achievement in a class lectured by television as contrasted with a similar class lectured by an instructor, the direct-teaching method was found to be significantly superior. As a result of this finding, it was decided that future biological science classes should be taught by the direct method, with television to be used at the discretion of the classroom teacher for special demonstration presentations. (MF)

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ED 044936

ATTITUDE AND ACHIEVEMENT COMPARISONS FOR DIRECT AND TELEVISION CLASSES IN BIOLOGICAL SCIENCE

BRIEF REPORT

JOHN C. WOODWARD

JULY, 1964

Report 4

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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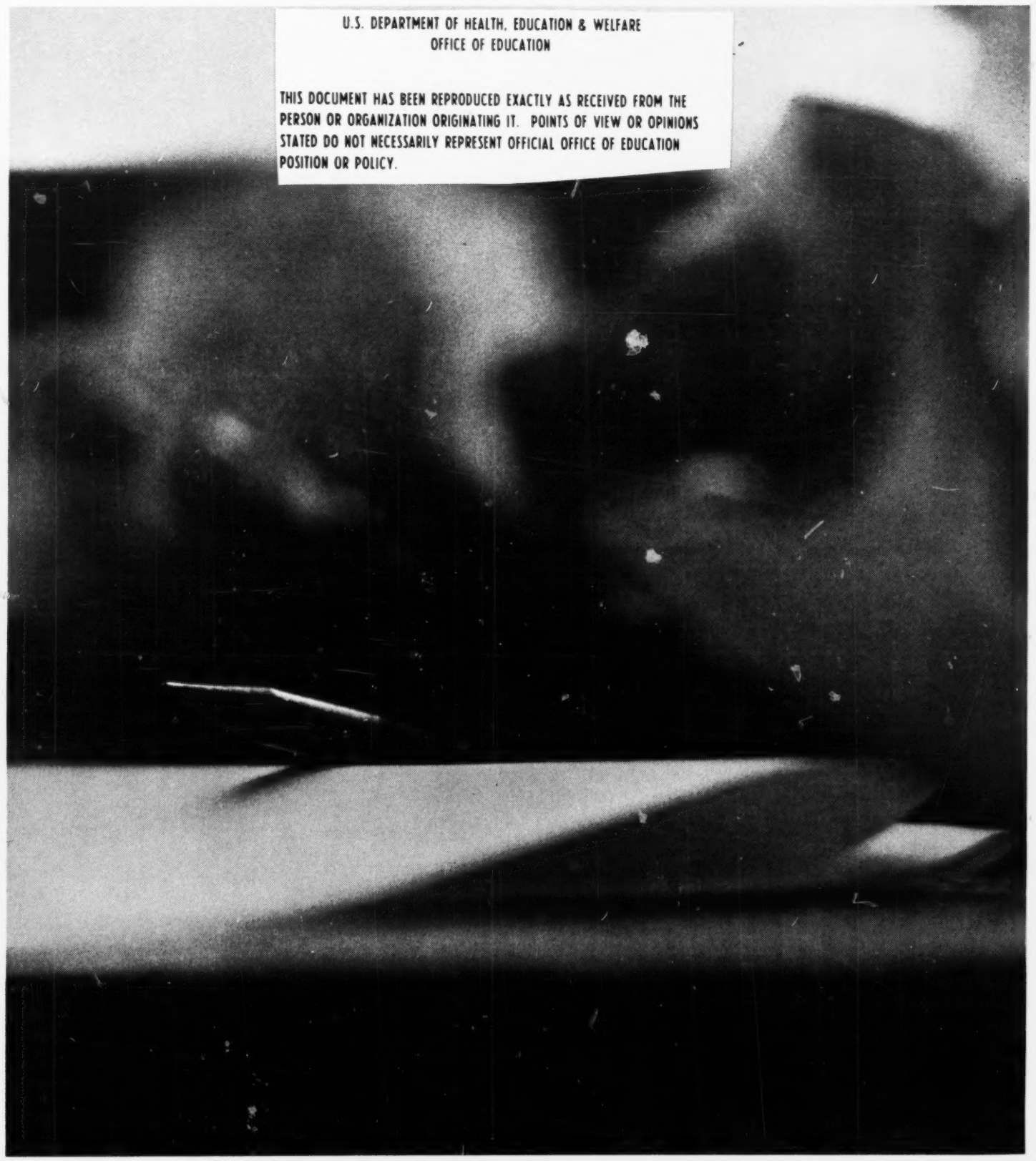

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SUPPORTED BY A GRANT FROM THE FUND FOR THE ADVANCEMENT OF EDUCATION

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Brief Report

John C. Woodward

July 1964

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Office for the Study of Instruction, University College, University of Miami, Coral Gables, Florida.

This study conducted under a grant from the Fund for the Advancement of Education.

Table of Contents

Introduction and Statement of the Problem 1

Method of Procedure 1

Analysis of Data and Results 1

Background Information 1
Attitude Information 2
Achievement Information 4

Summary and Conclusions 4

Action Taken 5

Introduction and Statement of the Problem

During the First semester of the 1963-64 academic year Natural Scienc 201, the first semester of biological science, was offered both by direct teaching (instructor in the classroom) and by television lecture. The one direct teaching section was offered at the 8:00 o'clock hour in the morning and the TV lecture sections, three in number, were offered at 10:00 A.M. The direct lecture was given by Dr. Margaret J. Mustard; the TV lectures were given by Dr. Robert H. Williams and Dr. Mustard.

The investigation was conducted to answer the following questions:

1) What is the student attitude in the direct taught section as compared to the TV sections?

2) What is the difference in achievement as measured by classroom exams between the direct and TV sections?

Method of Procedure

To test the difference in attitude between the two groups, an attitude scale was developed. The scale was administered to the students in all sections ten days prior to final examinations for the first semester. Student answers were key punched into IBM cards for computer analysis.

To evaluate the achievement differential between the direct taught group and the TV group, both were given identical instruction (same lectures, material, etc.) except that the TV group received the instruction via TV and the direct group directly in the classroom. Identical exams were administered to both groups and analyzed as one achievement criterion.

The final examination contained one hundred questions. Fifty of these questions were over material taught identically, except for TV, to both groups. These fifty questions were analyzed for differences as a second achievement criterion.

The following is a brief summary of the major findings of the research. A full scale report is available.

Analysis of Data and Results

<u>Summary of background information</u>:

1) An analysis of the scholastic aptitude for the two groups, direct vs. television, indicates no significant difference in scholastic aptitude.

2) No difference exists in previous science course grades for the two groups.

3) No difference was found in previous over-all college grade point average for the two groups.

Summary of attitude information:

1) Ninty-two percent of the direct group feel that the course is well organized while only 52% of the TV group report this. The difference between the two groups is statistically significant.

2) Of the direct group, 88% feel that the examinations are fair tests of course material while 52% of the TV group feel this way. This difference in group attitude is significant.

3) To the statement that the grades in this course are based on very limited evidence of achievement, the majority of the direct group disagree (56%) while a significant minority (30%) of the TV group disagree. This difference is highly significant.

4) Both groups register a significant "no opinion" for a statement that a large percentage of students cheat in some way on examinations.

5) Both groups agree that natural science is an important area of study for anyone going to college. The direct taught group feels significantly stronger about this than does the TV group, however.

6) Both groups agree that the assignments are well related to course objectives. Of the direct group, 91% feel this way, whereas 68% of the TV group feel this way. The difference here between groups is significant.

7) Sixty-six percent of the TV group feel that there is a detrimental lack of opportunity for personal attention in the course. This is significantly greater than the 42% reported by the direct group.

8) In the direct group, 95% feel that the lectures are well organized whereas 62% of the TV feel this way. This difference is significant.

9) A significant proportion (48%) of the TV group agree that it is better to have TV lectures by the best possible natural science professors than regular classroom lectures by average professors. Of the direct group, 38% agree to this statement.

10) Ninty percent of the direct group feel that the lectures are easy to follow, understandable and clearly presented. Only 33% of the TV group feel this way. This is a significant difference.

11) There is a significant difference in the way the two groups feel about student attention during the lectures. Seventy-eight percent of the TV group feel that a large portion of the students are <u>not</u> attentive during the lecture. Only 23% of the direct group feel this way.

12) In response to the statement that the lecturer covers too much material in each lecture, 42% of the TV group agree, whereas only 12% of the direct group feel this way. This is a statistically significant difference.

13) Only 8% of the direct group think that TV lectures are superior to regular in-class lectures. Twenty-five percent of the TV group think this way.

14) A majority of the direct students (59%) find the methods of teaching used in their section superior to methods used in their previous natural science courses. In the TV group, only 22% found this true. This is a significant difference between the groups.

15) To the statement that this course is very boring most of the time, 62% of the TV group agreed; only 14% of the direct group reported this feeling. This is a highly significant difference.

16) Thirty-six percent of the TV group report that their interest in natural science has decreased as a result of their experience in the course. Only 12% of the direct group report this.

17) A significant number of both groups (88% direct and 69% TV) report that it is better to have a lecture by a professor in the classroom than to have the same lecture by the same professor on TV.

18) The direct group prefers (72%) to have one lecturer in a course than to have two. Of the TV group, only 34% report this preference.

19) Both groups, to a significant degree, feel that the University College curriculum provides a broad integrated intellectual experience for students.

20) The direct group and the TV group feel that the attitude of most University College students is very negative toward the teaching methods used in University College. Sixty-three percent of the direct group and 62% of the TV group express this feeling.

Summary of achievement information:

1) Comparisons were made between the two groups on a mid-term exam. Both groups received the same lectures from the same instructor and the same examination. The mean achievement of the direct group is significantly higher than the TV group at the .001 level of confidence. This indicates that you would not expect a difference as great as this by chance more than once in 1,000 times.

2) The final examination was analyzed for differences between the groups. Fifty of the items of this exam were over material taught by the same instructor to both groups. The mean score for the direct group on these items was statistically significantly higher, .001 level, than the mean score for the TV group. This again indicates an achievement superiority of the direct group in statistical terms.

Summary and Conclusions

Compairsons made for attitude and achievement between two classes of biological science, one direct teaching and one television teaching, indicates that the attitude and achievement of the direct taught group is significantly better than the TV group.

It must be concluded from these findings that within the framework of the methods investigated[1] the direct method is significantly superior to the TV method.

It is recommended that the TV lecture courses as it is now structured be eliminated. One of two courses of action could be followed. All sections could use the direct method of instruction using television only where it serves as the best means of presenting material to students, or the

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[1]Dr. Robert M. Diamond raises some questions concerning the quality of instructional television at the University of Miami in Report No. 6, "Progress Report on Instructional Television."

television course should be completely redesigned in close coordination with experts in the field of educational television production. If the second course of action is followed, it would be necessary to continue at least one direct section as a control group for the evaluation.

Action Taken

As a result of the findings of this research, all biological science classes will be taught by the direct method next fall. Television will be used for special demonstration presentations to all sections and where it is felt by the classroom instructor that television is the best means of presenting the material.